

On the Genus *Platycerus* (Coleoptera, Lucanidae) of Mt. Gongga Shan and Mt. Erlang Shan in West-central Sichuan, Southwest China

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Abstract *Platycerus dundai* is redescribed based on thirteen specimens including males from the type locality. *Platycerus benesi* is synonymized with this taxon and *P. miyatakei* is downgraded to its subspecies. A new species of the same genus is described from Mt. Erlang Shan under the name *P. ladyae*.

In one of the previous papers on the genus *Platycerus* of China, BARTOLOZZI and I described two new species from the eastern slope of Mt. Gongga Shan in west-central Sichuan. One is *P. benesi* from Moxi, a small village located at the entrance to the Hailuoguo Valley, and the other is *P. dundai* from the Hailuoguo Glacier Park (IMURA & BARTOLOZZI, 1994, pp. 140, 142). This discovery was very important, since it was the first record of the genus from Sichuan Province and of the group of *P. delicatulus* from China. Unfortunately, however, each species was known so far only from a single female specimen, so that we were unable to give detailed discussion on their taxonomy based on the male and its genitalia. Since then, no contribution has been made to the *Platycerus* inhabiting the Gongga Shan area and the two species have been left unstudied for more than ten years.

To solve the problem, I visited the same mountain in the spring of 2005 and succeeded in collecting thirteen specimens of *P. dundai* including the first male from the Hailuoguo Valley, the type locality of the species. After a close examination, I have realized that this species is considerably variable according to individuals, and *P. benesi* should be regarded as belonging to the same species. In the following lines, I am going to give a full description of *P. dundai* and regard *P. benesi* as its junior synonym. In addition, *P. miyatakei* described from Jin'yan Xian of southern Sichuan is downgraded to a subspecies of the same species.

Another important discovery was also made during the same collecting trip. On the way back to Chengdu from Mt. Gongga Shan, I had an opportunity to visit Mt. Erlang Shan on the Jiajin Shan Mountains lying to the east by north beyond the deep valley of the Dadu He River, and collected a short series of *Platycerus* specimens composed of the species theretofore unknown to science. In the latter part of this paper, I am going to describe it as a new species under the name of *P. ladyae*.
Before going further, I wish to express my sincere gratitude to Mr. Yoshiyuki

NAGAHATA (Yonezawa) and Mr. FAN Ting (International Academic Exchange Center of the Academia Sinica, Chengdu) for their kind aid through my field work. I am grateful to Mr. Shigehiko SHIYAKE (Osaka Museum of Natural History) for kindly taking trouble for a loan of the type specimens of *P. miyatakei*. Hearty thanks are due to Dr. Shun-ichi UÉNO (National Science Museum, Tokyo) for revising the manuscript of this paper.

1. *Platycerus dundai* IMURA et BARTOLOZZI, 1994

(Figs. 1–8, 10)

Platycerus dundai IMURA et BARTOLOZZI, 1994, Elytra, Tokyo, **22**, p. 142, figs. 2, 4; type locality: Hailuoguo Glacier Park on the eastern slope of Mt. Gongga Shan in Luding Xian, central Sichuan, Central China; type depository: Museo di Storia Naturale della Università di Firenze, Sezione di Zoologia "La Specola" (collection No. 9730).

Platycerus benesi IMURA et BARTOLOZZI, 1994, Elytra, Tokyo, **22**, p. 140, figs. 1, 3; type locality: near Moxi, ca. 1,500 m, in Luding Xian, central Sichuan, Central China; type depository: Museo di Storia Naturale della Università di Firenze, Sezione di Zoologia "La Specola" (collection No. 9731) [*syn. nov.*].

Length (including mandibles): ♂, 12.2–13.1 mm; ♀, 11.0–12.9 mm.

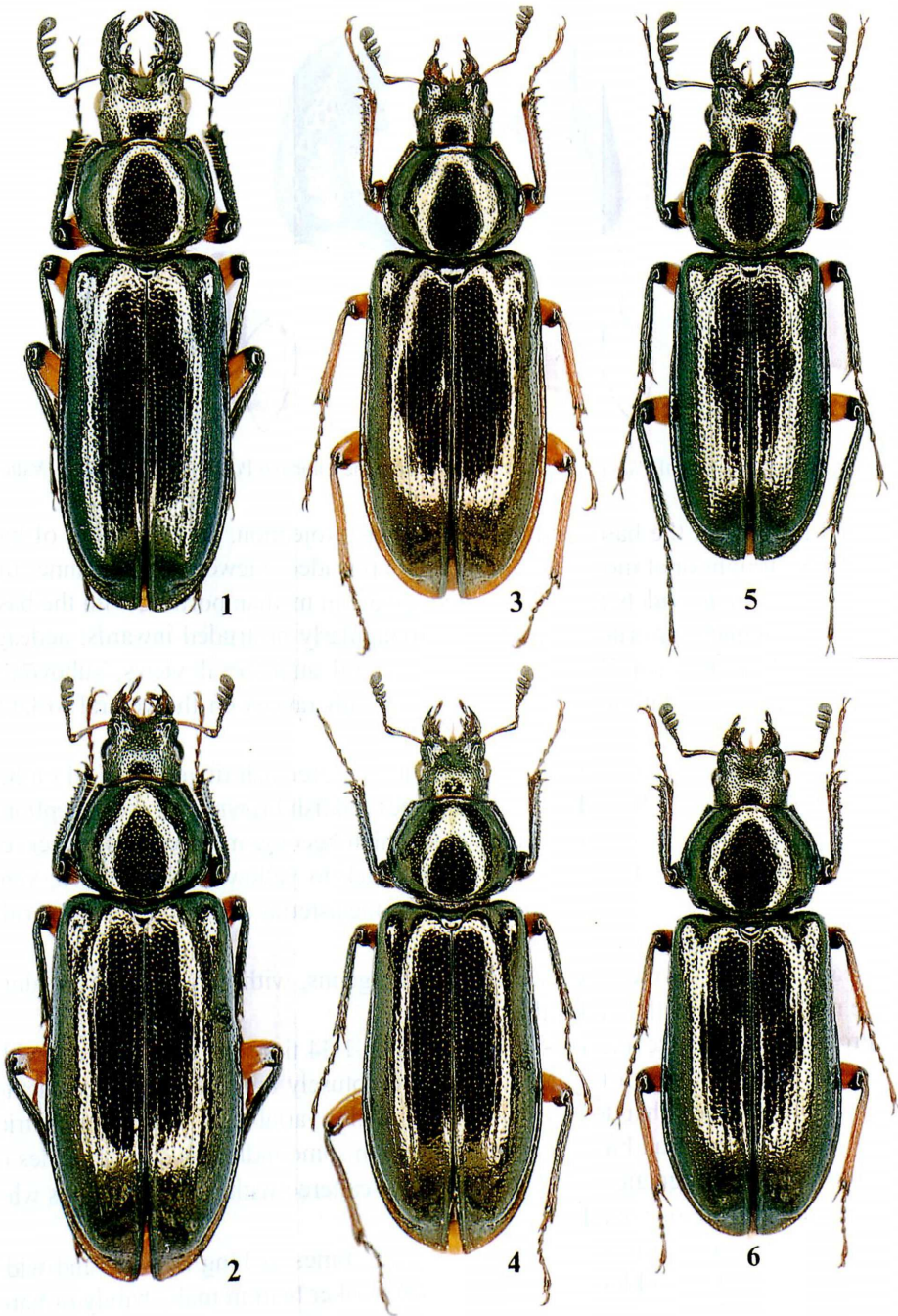
Male. Body above bluish green with a bronzy tinge or brassy with a blue-greenish tinge, and strongly polished; mandibles, knees and tibiae greenish black; palpi, antennae, tarsi and claws brownish black; femora except for the distal ends yellowish brown; venter greenish black with the exception of metasterna and abdominal sternites which are more or less yellowish or red-brownish.

Head as in the other members of the genus; its dorsal surface rather coarsely scattered with punctures, each puncture a little larger in size for the genus and not confluent with one another; mandibles (Fig. 7) large and stout, distinctly concave above in basal portions, rather acutely hooked inwards at about apical third, tapered therefrom towards apices which are sharply pointed; inner margins of retinacula multi-dentate, with 4–5 small teeth on each side.

Pronotum transverse, 1.37–1.43 times as wide as long, widest near the posterior third, more acutely narrowed towards base than towards apex, with the front angles subtriangularly protruded anteriorly, the hind angles obtuse though obviously subangulate; disc rather strongly convex above for a member of the genus, a little more sparsely punctate than on head, each puncture almost the same in size as or a little smaller than that on head.

Elytra oblong-subovate, 1.68–1.81 times as long as wide, widest a little behind the middle; shoulders distinct, strongly rounded, with a small humeral tooth on each side; surface rather uniformly scattered with small punctures which are often arranged in longitudinal rows; intervals finely but obviously rugoso-striate above all near the sutural part a little before the middle.

Male genital organ as shown in Fig. 8; viewed ventrally, lateral side of each paramere hardly inflated in basal portion, its inner margin nearly straight and rather acutely



Figs. 1–6. *Platycerus dundai* subsp. from Sichuan, Southwest China. — 1 (♂), 2 (♀), Subsp. *dundai* from the Caohaizi Pond of the Hailuoguo Valley; 3 (♀), ditto (holotype) from the Hailuo-gou Glacier Park; 4 (♀), ditto (holotype of *P. benesi*) from near Moxi; 5 (♂), 6 (♀), subsp. *miyatakei* from Rekejue Xiang in Jin'yan Xian (5, holotype; 6, paratype).

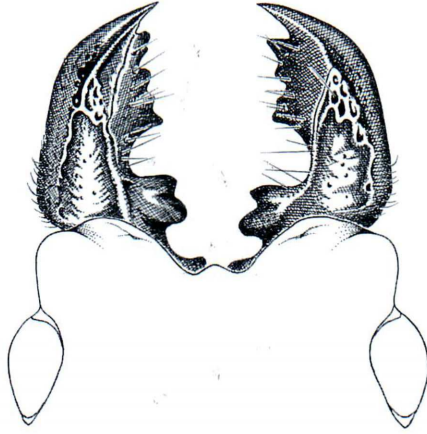


Fig. 7. Male mandibles of *Platycerus dundai dundai* from the Caohaizi Pond of the Hailuogou Valley.

protruded inwards at the basal end to form a short projection, apical margin of basal piece nearly straight or at most subtrapezoidally protruded; viewed dorsally, inner margin of each paramere widely and roundly emarginate in median portion, with the basal-inner angle obliquely protruded, basal piece triangularly protruded inwards; aedeagus subcylindrical, almost parallel-sided in both ventral and dorsal views, subovoid in shape in lateral view, with a pair of visor-like protuberances on the ventral to lateral margin.

Female. Body above brassy with a faint blue-greenish tinge above all on head and pronotum, and strongly polished; appendages reddish brown with the exception of marginal parts of mandibles, knees and tibiae which become more or less darker; coloration of tibiae varying from green-brownish black to yellow-reddish brown; venter dark brown though mesepimeron, metepisterna, metasterna and abdominal sternites yellowish to reddish brown.

Head almost as in the other members of the genus, with punctures on the dorsal surface not confluent with one another.

Pronotum transverse and sub-hexagonal, 1.32–1.34 times as wide as long, widest behind the middle at which the lateral sides are obtusely angulate, and more acutely narrowed towards apex than towards base; front angles variable in shape, usually triangularly protruded anteriad but barely or hardly so in some individuals; hind angles obtuse and weakly subangulate; disc rather sparsely scattered with small punctures which are not confluent with one another.

Elytra robuster than in male, about 1.54–1.57 times as long as wide and widest near the apical third; wrinkles on intervals much weaker than in male, barely or hardly recognizable near the sutural part a little before the middle.

Female genital organ as shown in Fig. 8-i, apical-inner angle of gonocoxite usually rather prominently projected postero-internally, but not remarkably so in some individuals; stylus also a little variable in shape according to individuals.

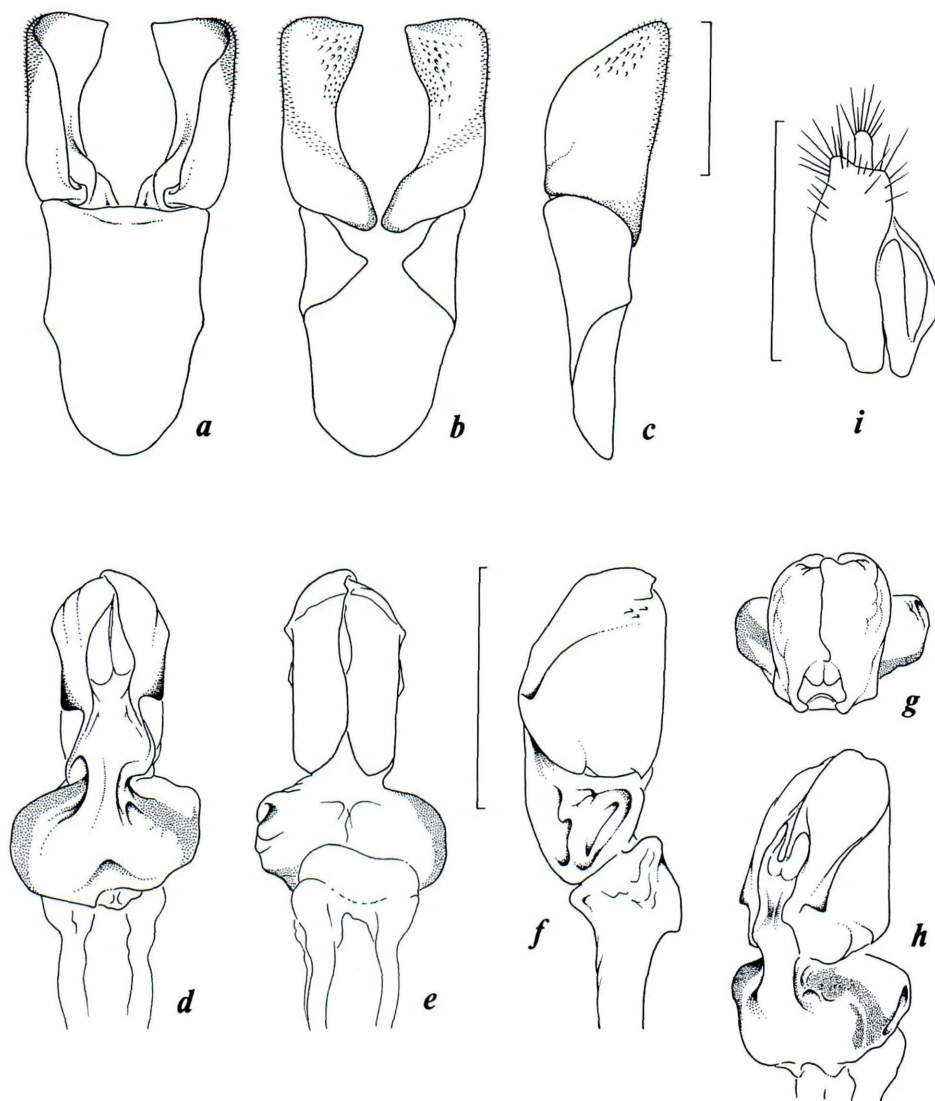


Fig. 8. Genital organ of *Platycerus dundai dundai* from the Caohaizi Pond of the Hailuogou Valley. — a–c, Paramere (=lateral lobe) and basal piece; d–h, aedeagus (=median lobe), i, left gonocoxite of the female genitalia. — a & d, Ventral view; b, e & i, dorsal view; c & f, right lateral view; g, view from aedeagal apex; h, right subventral view. Scale: 1 mm.

Specimens examined (totally 5♂♂, 8♀♀). 2♂♂, 2♀♀, Caohaizi [草海子] below Sanhaoyingdi [三号营地], 2,600–2,650 m in altitude, 22 & 24–III–2005; 3♂♂, 6♀♀, below Erhaoyingdi [二号营地], 2,250–2,300 m in altitude, 22–25–III–2005, all from the Hailuogou [海螺沟] Valley, on the eastern slope of Mt. Gongga Shan [贡嘎山], in southwest Luding Xian [泸定县], of west-central Sichuan, Southwest China, collected

by Y. IMURA & Y. NAGAHATA and preserved in the collection of Y. IMURA.

Notes. Before the present study, it was surmised that Mt. Gongga Shan might harbour at least two closely allied species occurring in the same valley called the Hailuogou, though obtained information for each taxon has been very poor. After intensively investigated in the field, however, I was finally convinced that all the specimens of *Platycerus* from the Hailuogou belong to a single variable species, *P. dundai*. Another taxon, *P. benesi* described as a distinct species from Moxi located at the entrance to the same valley, most probably falls in the category of the same species in every morphological feature as described above. Though the final conclusion should be drawn after examination of more specimens from the lower part of the same valley including Moxi and its nearby regions, it seems reasonable to regard *P. benesi* as a mere individual variation of *P. dundai*. The former is therefore synonymized with the latter. Incidentally, nearly all the old trees around the village of Moxi have already been cut down and the original vegetation is hardly maintained at present. For this reason, additional specimens including the male of “*P. benesi*” cannot be easily reobtained from the type locality.

Four years after the discovery of the Gongga Shan race, another new species of *Platycerus* was described under the name of *P. miyatakei* from Rekejue Xiang in Jin'yan Xian of southern Sichuan near the Yunnan borders (TANIKADO & TABANA, 1998, p. 26), which is about 250 km distant to the south by east in a beeline from Mt. Gongga Shan. Since the male of the Gongga Shan species was not known at that time, the original description of the Jin'yan Xian race was given under comparison between the female specimens alone. In the course of the present study, I was able to examine the holotype (♂) and paratype (♀) of *P. miyatakei* now preserved in the Osaka Museum of Natural History, and directly compared them with *P. dundai* by using the series containing both sexes. The Jin'yan Xian race well agrees with the Gongga Shan one in every morphological feature, and I have come to the conclusion that they should be regarded as belonging to the same species though somewhat different in details. The former is therefore downgraded to a subspecies of the latter (*Platycerus dundai miyatakei* [stat. nov.]). Morphological difference between subsp. *miyatakei* and the nominotypical *dundai* is not so large, but the former could be discriminated from the latter in the following points: 1) size a little smaller, with relatively shorter elytra; 2) coloration of the dorsal surface a little less strongly blue-greenish; 3) paramere of the male genitalia a little more strongly inflated laterally near the base in ventral view.

In the Hailuogou Valley, *P. dundai* is an inhabitant of the primitive forest preserved along the deep valley. All the specimens were found from the following two major collecting sites: one is the moss forest around the Caohaizi Pond below Sanhaoyingdi at an altitude of about 2,600 m, which lies in the *Picea* and *Rhododendron* zone; the other is the deciduous broad-leaved forest below Erhaoyingdi at the height of about 2,300 m, mainly composed of *Magnolia*, *Prunus* and several kinds of maple trees, etc. (Fig. 9). All the imagines collected were hibernating, together with their larvae, in the rotten wood either still standing or already fallen down (Fig. 10). They were

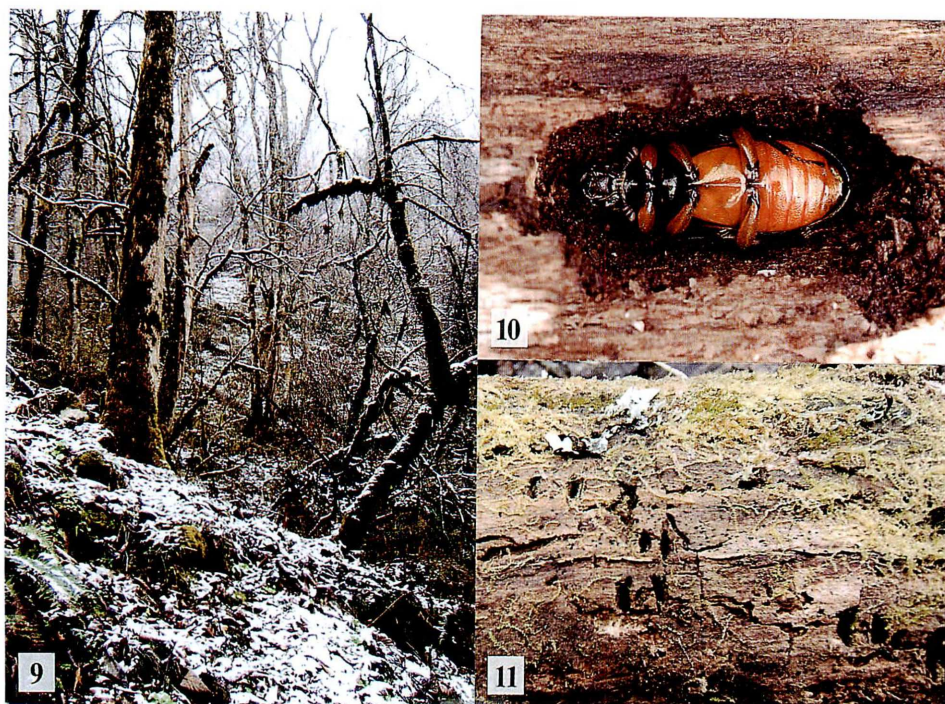


Fig. 9–11. Habitat, imagines in hibernation and oviposition mark of *Platycerus dundai dundai*. — 9, Habitat (deciduous broad-leaved forest below Erhaoyingdi, ca. 2,300 m in alt., of the Hailuogou Valley); 10, imagine (♀) hibernating in the withered wood; 11, oviposition mark left on the surface of withered wood (photograph by Y. IMURA (9 & 11) and Y. NAGAHATA (10) in March 2005).

found not only from the white-rotten wood often favored by the species belonging to the group of *P. delicatulus* but also from softly rotten one which is usually favored by those belonging to the group of *P. acuticollis*. Thus, *P. dundai* could exclusively occupy various niches in this area, possibly due to the absence of competitive species belonging to the same genus. As is observed in other members of the genus distributed in Eurasia and Japan, the present race leaves a peculiar oviposition mark on the surface of its food plant (Fig. 11).

2. *Platycerus ladyae* IMURA, sp. nov.

(Figs. 12–17)

Length (including mandibles): ♂, 10.4–11.6 mm; ♀, 10.9 mm.

Male. Body above purplish brown to coppery maroon with a faint greenish tinge and less strongly shiny for a member of the genus; marginal areas of pronotum and elytra greenish blue with rather strong metallic lustre; mandibles, palpi and antennae dark brown or almost black; femora yellowish brown except for blackish apical tips; tibiae brownish black, tarsi and claws dark brown; venter black with the exception

of posterior parts of metasterna and abdominal sternites which are yellowish to reddish brown.

Head a little hypertrophic for a member of the genus above all in large individuals, transversely subquadrate, 1.38–1.48 times as wide as long, with large and strongly protruded eyes; dorsal surface rather coarsely scattered with large punctures, which are partly fused with one another on both sides of frons near eyes; mandibles (Fig. 16) long and slender for a member of the genus, with the lateral margins of basal portions remarkably sinuate, rather acutely hooked inwards at apical third, then gradually tapered towards apices which are sharply pointed in dorsal view and obviously reflexed above in lateral view; retinacula longitudinally elongated and weakly multi-dentate, with 4–5 small teeth on each side.

Pronotum sub-hexagonal, 1.37–1.40 times as wide as long, widest near the basal third, and more acutely narrowed towards base than towards apex; apical margin slightly bisinuate with the front angles triangularly protruded anteriad; sides almost straight before the widest part, subangulate near basal third, then rather acutely narrowed towards hind angles which are obtusely rounded; disc moderately convex above, rather coarsely scattered with relatively large punctures, which are not confluent with one another.

Elytra long and slender for a member of the genus, 1.08–1.85 times as long as wide, widest a little behind the middle, almost parallel-sided in apical two-thirds, then roundly narrowed towards the apices; humeri distinct and rounded, with a pair of small spiniform projections; surface scattered with smaller punctures rather irregularly arranged in longitudinal rows; intervals strongly rugoso-striate throughout, and partly becoming rather scabrous.

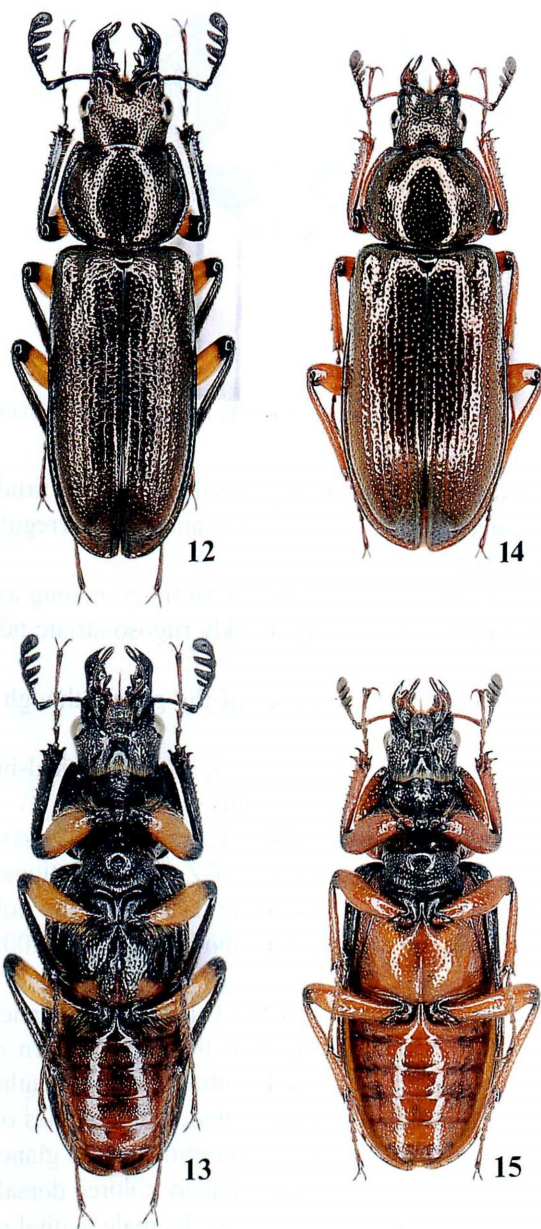
Tarsi very long for a member of the genus, with the total length measured with claws almost equal to those of tibiae.

Male genital organ as shown in Fig. 17; paramere short and robust, with the lateral sides obviously inflated laterad in basal portions, inner margins on ventral side almost straight or somewhat bisinuate and rather acutely emarginate near the base, those on dorsal side widely and roundly emarginate throughout, each piece with a semi-transparent fenestra near the basal-inner angle on ventral side; basal piece with the apical margin nearly subtrapezoidally protruded and slightly emarginate at middle in ventral view, inner margins on dorsal side triangularly projected inwards; aedeagus subcylindrical in basal portion and hemispherical in apical portion, with a pair of visor-like protuberances on the ventral to lateral margin.

Female. Body above lighter in coloration and more strongly polished than in male; palpi, legs, metasterna and abdominal sternites reddish brown.

Head almost as in the other members of the genus, with the dorsal surface a little more coarsely scattered with punctures which are more frequently fused with one another than in male.

Pronotum transverse-subovate, 1.32 times as wide as long, widest at about basal quarter though not so remarkably subangulate there, much more strongly narrowed to-



Figs. 12–15. *Platycerus ladyae* from Mt. Erlang Shan of the Jiajin Shan Mountains. — 12, 13, Holotype (♂); 14, 15, paratype (♀) (12 & 14, dorsal view; 13 & 15, ventral view).

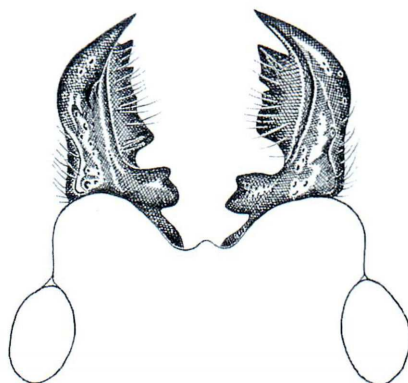


Fig. 16. Male mandibles of *Platycerus ladyae* from Mt. Erlang Shan of the Jiajin Shan Mountains.

wards apex than towards base, with the front angles faintly protruded anteriorly; disc a little more strongly convex above than in male, and rather irregularly scattered with punctures not confluent with one another.

Elytra shorter and robuster than in male, 1.56 times as long as wide, with the intervals much smoother than in male, only weakly rugoso-striate near the sutural parts before the middle.

Tarsi also a little longer for a member of the genus, though apparently shorter than tibiae.

Female genital organ as shown in Fig. 17-i, with the apical-inner angle of gonocoxite acutely projected postero-internally, stylus slender.

Type series. Holotype: ♂, 26-III-2005, Y. IMURA & Y. NAGAHATA leg., to be deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 2♂♂, 1♀, same data as for the holotype; 3♂♂, 2♀♀, (larvae collected in the field; emerged in the laboratory in July 2005), preserved in the collection of Y. IMURA.

Type locality. Northeastern side of the Erlang Shan Tunnel [二郎山隧道], ca. 2,000 m in altitude, on Mt. Erlang Shan, near the southwestern corner of Tianquan Xian [天全县] in Ya'an Shi [雅安市], of west-central Sichuan, Southwest China.

Notes. This new species has obtusely rounded hind angles of the pronotum and belongs to the group of *P. delicatulus*. It is discriminated at a glance from all the hitherto known members of the genus in having uniquely colored dorsal surface, peculiarly shaped male mandibles and much elongated tarsi. Its male genital organ is also unique in bearing a semi-transparent fenestra on the ventral side of each paramere. Though strikingly different in general appearance and conformation of the paramere, the new species may have an affinity to such species as *P. dundai* and *P. feminatus* (TANIKADO & TABANA, 1997, p. 7) distributed in the west-central to southern part of Sichuan Province, since these three share a common character in basic structure of the aedeagus.

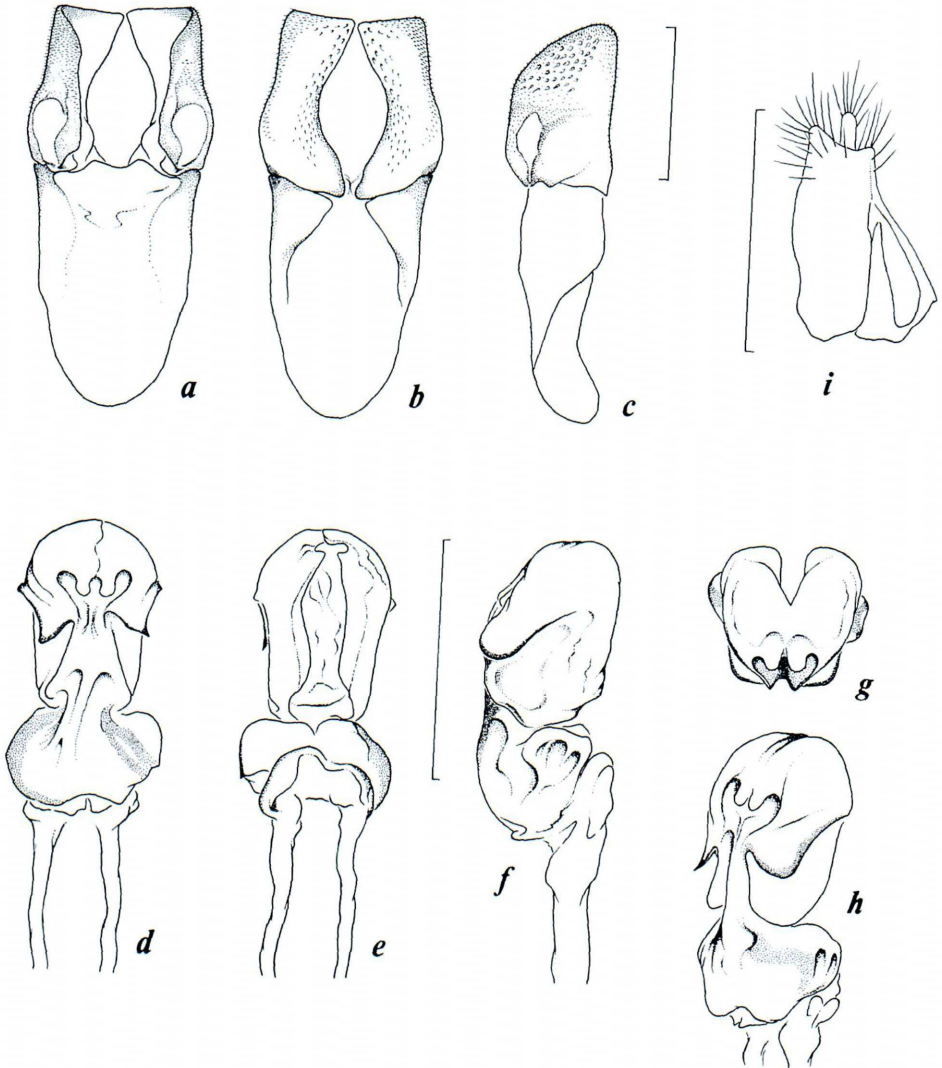


Fig. 17. Genital organ of *Platycerus ladyae* from Mt. Erlang Shan of the Jiajin Shan Mountains. — a–c, Paramere (=lateral lobe) and basal piece; d–h, aedeagus (=median lobe), i, left gonocoxite of the female genitalia. — a & d, Ventral view; b, e & i, dorsal view; c & f, right lateral view; g, view from aedeagal apex; h, right subventral view. Scale: 1 mm.

The habitat of the present new species is a mixed forest composed of deciduous broad-leaved trees and evergreen oak tree, which is rather widely preserved on the northeastern side of Mt. Erlang Shan. All the imagines collected were hibernating in white-rotten branch fallen down from the main trunk of certain kind of maple tree. From the same environmental condition, were discovered a few larvae of *Platycerus* referable to the same species. The present new species also leaves a peculiar oviposition mark on the surface of its hood plant.

Derivatio nominis. The new specific name of the present lucanid beetle is derived from my pet dog, a female golden retriever named *Lady*, who unexpectedly passed away at the premature age of seven due to autoimmune hemolytic disease on the day just before my departure to the Chinese expedition.

要 約

井村有希：中国四川省中西部の贡嘎山と二郎山のルリクワガタ属。—— 中国四川省中西部にある贡嘎山東麓の海螺沟から1♀のみの標本に基づいて記載されたデュンダルリクワガタ *P. dundai* を、あらたに得られた♂を含む複数の標本に基づいて再記載した。やや標高の低い磨西周辺から同じく1♀に基づいて記載されたベネシュルリクワガタ *P. benesi* と四川省南部の金阳县から記載されたミナミツヤルリクワガタ *P. miyatakei* は、いずれも種としてはデュンダルリクワガタと同一のものと考えられるため、前者を同種のシノニムとみなし、後者をその1亜種に降格した。本論文ではさらに、同省雅安市天全县の二郎山から得られたルリクワガタを新種とみなし、レディルリクワガタ *P. ladyae* という名を与えて記載した。本新種は前胸背板後角が丸まるルリクワガタ系の一員で、陰茎の基本形態からデュンダルリクワガタやアカアシツヤルリクワガタ *P. feminatus* といった四川省中～南部に分布する各種と同じ系列に属するものと思われるが、両性とも体表に紫銅褐色の色彩をそなえ、♂の大顎基部外側縁がつよく湾入し、付節が長く伸張するなど、既知の中国産ルリクワガタ各種から一見して識別できる顕著な形態的特徴を有している。

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